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YOUNGS BAY AND YOUNGS RIVER, OREG.

LETTER

FROM

THE SECRETARY OF WAR

TRANSMITTING

REPORT FROM THE CHIEF OF ENGINEERS, UNITED STATES ARMY, ON PRELIMINARY EXAMINATION AND SURVEY OF YOUNGS BAY AND YOUNGS RIVER, OREG.

JANUARY 6, 1932.—Referred to the Committee on Rivers and Harbors and ordered to be printed, with illustration

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WAR DEPARTMENT,
Washington, January 6, 1932.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: I am transmitting herewith a report dated January 4, 1932, from the Chief of Engineers, United States Army, on preliminary examination and survey of Youngs Bay and Youngs River, Oreg., authorized by the river and harbor act approved July 3, 1930, together with accompanying papers and illustration.

Sincerely yours,

PATRICK J. HURLEY,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, January 4, 1932.

Subject: Preliminary examination and survey of Youngs Bay and Youngs River, Oreg.

To: The Secretary of War.

1. I submit, for transmission to Congress, my report, with accompanying papers and illustration, on preliminary examination and survey of Youngs Bay and Youngs River, Oreg., authorized by the river and harbor act approved July 3, 1930.

2. Youngs Bay is an arm of the estuary of Columbia River, just west of the city of Astoria. The channel through the bay is about 3 miles long and has a controlling depth of about 8 feet. Youngs River enters the head of the bay. Its tidal and navigable portion is about 8 miles in length. The natural channel has a controlling depth of 10 feet or more to Haven Island, about 5 miles above the mouth. Above the tidal section the river is a mountain stream. The mean range of tide in the bay is 7½ feet, diminishing to 6 feet near the head of navigation in the river. An appropriation of $1,600 was made in 1890 and expended in the removal of snags and overhanging trees, but there is no present project for improvement. The improvement desired by the navigation interests engaged in towing logs in the river is a suitable channel for boats of 10-foot draft. The Pacific Power & Light Co. desires a channel 30 feet deep and 300 feet wide at the head of Youngs Bay. The Astoria Chamber of Commerce advocates, in addition to the latter improvement, a channel 20 feet deep and 200 feet wide, as far up Youngs River as practicable, and 10 feet deep beyond that point.

3. The principal commerce on Youngs Bay and River is the towing of logs in rafts and the transportation of sawmill waste in barges from mills on the Columbia River to the plant of the Pacific Power & Light Co. at the head of the bay. The traffic in 1930 is estimated at 640,000 tons of rafted logs and 60,000 tons of barged sawmill waste. Four towing companies are engaged in the transportation of rafted logs. The total available timber supply tributary to Youngs River is estimated at 6,000,000 tons.

4. Logs are brought down the river to booms in the vicinity of Haven Island by small boats, and are there assembled in heavier tows for transportation up the Columbia River. Tidal conditions are such that economic transportation of this freight requires the passage through the lower portion of Youngs River and Youngs Bay at low tide. The district engineer presents a plan for dredging a channel 10 feet deep and 150 feet wide through the shoals in Youngs Bay and River to the foot of Haven Island at an estimated first cost of $5,000, with $1,800 per annum for maintenance. He analyzes the benefits from this channel, and finds that it would effect transportation economies of $2,500 per annum. He reports that there is no present or immediately prospective commerce which would be benefited by a channel 30 feet in depth to the plant of the Pacific Light & Power Co., although such a channel might be of value if, in the future, the plant changes from wood fuel to coal.

5. The division engineer, concurring with the district engineer, recommends the improvement of Youngs Bay and Youngs River to provide a channel 150 feet wide and 10 feet deep at mean lower low water to the foot of Haven Island.

6. The reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, agreeing with the division engineer.

7. After due consideration of the above-mentioned reports, I concur in the recommendation of the board. Under normal conditions in the lumber industry the benefits from the proposed improvement are sufficient to justify the cost. There is no apparent justification for the further improvements desired by the Astoria Chamber of Commerce or the Pacific Power & Light Co. I therefore report that

the improvement of Youngs Bay and Youngs River, Oreg., is deemed advisable to the extent of providing a channel 10 feet deep and 150 feet wide from the Columbia River to the foot of Haven Island, at an estimated cost of $5,000, with $1,800 annually for maintenance.

LYTLE BROWN,
Major General, Chief of Engineers.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS

SYLLABUS

The Board of Engineers for Rivers and Harbors concurs with the division engineer and recommends a channel 10 feet deep and 150 feet wide from the Columbia River to the foot of Haven Island, at an estimated cost of $5,000, with $1,800 annually for maintenance.

[Second indorsement]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., November 30, 1931.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. The following is in review of the reports on preliminary examination and survey of Youngs Bay and Youngs River, Oreg., authorized by the river and harbor act approved July 3, 1930.

2. The reports herewith contain information concerning existing conditions, the improvements desired by local interests, the benefits expected, and the physical characteristics of the improvement recommended. The reporting officers are of the opinion that improvement by the United States is justified.

3. The Board of Engineers for Rivers and Harbors concurs in the opinion of the division engineer. The saving in transportation costs expected to result from the improvement is somewhat in excess of the annual charges, including maintenance. It is based on existing commerce and traffic, principally lumber, which is decidedly below normal at present. Expected recovery of the lumber industry and a return to more normal operating conditions will increase the expected benefits in proportion. The proposed channel dimensions should prove adequate for the existing traffic. Improvement above Haven Island is not economically justified. The board therefore recommends a channel in Youngs Bay and Youngs River, Oreg., 150 feet wide and 10 feet deep, from the Columbia River to the foot of Haven Island, at an estimated cost of $5,000, with $1,800 annually for maintenance.

4. In compliance with law, the board reports that there are no questions of terminal facilities, water power, or other subjects so related to the project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

HERBERT DEAKYNE,
Colonel, Corps of Engineers, Senior Member.

REPORT ON PRELIMINARY EXAMINATION OF YOUNGS BAY AND YOUNGS RIVER, OREG.

SYLLABUS

It appears that the improvement of Youngs Bay, Oreg., and of Youngs River, Oreg., to a point about 7 miles above the mouth, namely, to mouth of Klaskanine River, to provide channel depths and widths suitable for the towing of logs, would be of material benefit to the general public. The traffic amounts to about 700,000 tons per annum. A survey and estimate of cost is, accordingly, recommended.

WAR DEPARTMENT,
OFFICE OF THE DISTRICT ENGINEER,
Portland, Oreg., October 15, 1930.

Subject: Preliminary examination of Youngs Bay and Youngs River, Oreg.
To: The Chief of Engineers, United States Army
(Through the Division Engineer).

1. In accordance with an item in the river and harbor act approved July 3, 1930, and instructions contained in letter from the Chief of Engineers dated July 15, 1930, the following report on preliminary examination of Youngs Bay and Youngs River, Oreg., is submitted.

GENERAL DESCRIPTION

2. Youngs River is a tributary of the lower Columbia. It empties into Youngs Bay, an arm of the Columbia, south and west of Astoria, Oreg., and about 10 miles from the mouth of the Columbia. (See Coast and Geodetic Survey Chart No. 6151, and map [1] submitted herewith.) The river has a total length of about 20 miles above the highway bridge at the upper end of Youngs Bay and a drainage area of about 115 square miles. The tidal section of Youngs River, which is the only part susceptible of navigation, is about 8¼ miles in length. The width of Youngs River varies from about 1,300 feet at its mouth to about 300 at the confluence of the Klaskanine, the principal tributary of Youngs River, about 7 miles above. Above the mouth of the Klaskanine, Youngs River continues to grow narrower and becomes a mountain stream at a 69-foot fall, about 9 miles above the mouth. Depths at mean lower low water below the falls vary from about 4 feet to 15 feet for most of the length. Near the mouth of the river there is a stretch with depths of 15 to 46 feet. The tidal variation at the mouth is about 7½ feet, which is reduced to about 6 feet at the mouth of Klaskanine. Winter rains in the watershed cause fluctuations in stage above the falls but have little effect in the navigable section of the river where the flow is principally tidal.

3. Youngs Bay, into which the river empties, is an arm of the estuary of the Columbia, about 3 miles wide at the mouth and about 3 miles in length to the highway bridge. The land to the south and west of the bay is low. On the north and east side is the promontory on which the city of Astoria is built. Depths in the bay range from zero to about 8 to 15 feet at mean lower low water. The tidal range is about 7½ feet. The bottom is composed of fine sand and silt.

[1] Not printed.

PREVIOUS EXAMINATIONS AND SURVEYS

4. Previous examinations were made as follows:

Title	Date	Document	Recommendation
Youngs, Lewis and Clark and Skipanon Rivers.	1882	S. Ex. Doc. 112, 47th Cong., 1st sess.	No recommendation.
Youngs River and Klaskuine River, Oreg. (survey)[1]	1888 1889	H. Ex. Doc. 69, 51st Cong., 1st sess.	Favorable to removing snags, $1,650.
Youngs Bay channel	1890	H. Ex. Doc. 67, 51st Cong., 2d sess.	Unfavorable.
Youngs Bay and River, Oreg.	1913	H. Doc. 1386, 62d Cong., 3d sess.	Do.
Channel in Youngs Bay, Columbia River, Oreg.	1917	H. Doc. 747, 65th Cong., 2d sess.	Do.

[1] Klaskuine River is identical with Klaskanine River referred to in this report.

PREVIOUS PROJECTS

5. The river and harbor act of September 19, 1890, appropriated $1,600 for improvement of Youngs and Klaskuine Rivers, Oreg., which was used in the removal of snags and overhanging trees, in accordance with House Executive Document No. 69, Fifty-first Congress, first session, Annual Report of Chief of Engineers, 1890, page 2989.

EXISTING PROJECT

6. None.

PRESENT CONDITION

7. At the present time Youngs Bay and River are in fair condition for navigation. Channel depths at low water in the bay range from 8 to 15 feet, and in the river from about 4 to 15 feet, except in the bend just above the highway bridge, where depths range up to about 46 feet. There are some snags, but navigation is affected principally by the controlling depths at low water which are not sufficient to accommodate the larger towboats.

RESOURCES AND INDUSTRIES

8. Tributary to Youngs River there is claimed by logging companies to be about 2,000,000,000 feet board measure of timber, principally fir, hemlock, spruce, and cedar. This timber can be transported to market at a smaller cost by way of the river than by any other route. The logs are hauled on logging railroads and dumped in the Youngs and Klaskanine Rivers, from which they are towed in rafts. The rate of hauling from this source at the present time is about 100,000,000 feet board measure per annum. In actual tonnage this is equivalent to about 400,000 tons, valued at about $1,600,000.

9. On the north side of Youngs Bay just west of the highway bridge there is located the steam power plant of the Pacific Power & Light Co. This plant has been using "hog fuel" (mill refuse), which is hauled to the plant on barges from mills located about 35 miles up the Columbia River. Power is distributed from this plant over a large area in the lower Columbia district and to towns on the coast.

10. In recent years a number of logging concerns on the west coast of Oregon have been towing seagoing rafts of logs from some of the

smaller coast ports into Youngs Bay and lower part of Youngs River, where they are "broken up" and rerafted for distribution to various mills on the Columbia River. This traffic has amounted to about 30,000,000 feet (120,000 tons) per annum, which moves into Youngs Bay and then out again after rerafting and storage.

11. The land along the west and south side of Youngs River below the falls is very fertile. It is protected from overflow at high tide by small levees and is used principally as pasturage for dairy stock, for the raising of poultry, and for truck gardening.

COMMERCIAL STATISTICS

12. There are no published statistics for traffic on Youngs Bay and Youngs River, but the information secured from logging and towing companies, and referred to in paragraphs 8 to 10, may be summarized as follows:

	Value
Outbound logs, 520,000 tons	$2,080,000
Inbound logs, 120,000 tons	[1]
Inbound hog fuel (barged), 60,000 tons	18,000
Total in and out bound, 700,000 tons	2,098,000

The draft of tugs handling logs varies from 6 to 10 feet, and of the inbound seagoing rafts from 10 to 15 feet. The fuel barges draw about 6 feet.

BOAT LINES, RAILWAYS, AND HIGHWAYS

13. There are no boat lines operating at present on regular schedules, but four towing companies engaged in handling logs in rafts and in towing fuel make frequent trips in and out of the bay and river.

14. Two logging railroads, one of them a common carrier, operate between the booms on the river and the timber. The Spokane, Portland & Seattle Railway, which operates standard freight and passenger trains between Portland, Astoria, and Seaside, crosses Youngs Bay near its mouth.

15. There are two paved highways, one on each side of Youngs River, which are used by farmers in reaching markets at Astoria and other points. The lower Columbia River Highway, connecting with the Roosevelt Coast Highway, crosses Youngs Bay at approximately the mouth of Youngs River. (See map herewith.[2])

BRIDGE CLEARANCES

16. The Spokane, Portland & Seattle Railway bridge has a swing draw span with two openings each 130 feet wide. The highway bridge has a double leaf bascule draw span with 150 feet horizontal clearance.

FREIGHT RATES

17. Rates for towing rafted logs from Youngs River to the vicinity of Portland vary from $1.10 to $1.20 per thousand feet board measure. The rate to storage booms in the vicinity of Blind Slough (on Colum-

[1] Included above. [2] Not printed.

bia River about 30 miles above Astoria) is 35 cents per thousand. None of the traffic is handled by rail or truck.

TERMINAL FACILITIES

18. The terminals on Youngs River consist principally of the log booms and rollways used for the storage and handling of logs at the river termini of the logging railroads. They are privately owned. There are some other small landings on the river used by farmers, but these are of little importance in a commercial way.

The only terminal in Youngs Bay is at the plant of the Pacific Power & Light Co. This is a privately owned wharf used for unloading cut-wood fuel from barges for use in the power plant. There is no demand for any facilities for handling general freight, as the principal traffic is in logs and cut fuel. Local freight to farming country is handled by truck on the highways.

ADJACENT PORTS

19. Lewis and Clark River, about 2 miles to the west of Youngs River, has the same general characteristics as the latter. Both are used primarily for the towing of logs in rafts. The same logging companies are operating on both, finding it more advantageous to do so, as the use of one river only would involve the construction of additional railroad trackage and increase the cost of operation. Improvement of Youngs Bay and Youngs River would not adversely affect the commerce of any other waterway.

DESIRES OF LOCAL INTERESTS

20. The towboat companies engaged in towing logs in Youngs Bay and Youngs River want a channel of sufficient depth to accommodate their larger boats at any stage of the tide and of suitable width. The draft of the larger boats is about 10 feet.

21. In letter of September 10 the Pacific Power & Light Co. states:

> This plant at the present time uses sawmill refuse for fuel which is transported by water from points located up the Columbia River from Astoria. When conditions are such that this fuel is not available oil is utilized for fuel. We are unable to predict what the future of the Northwest will be—whether there will be a plentiful supply of sawmill refuse and oil for fuel or whether steam plants, such as the one at Youngs Bay, may have to depend upon coal for fuel. There may therefore be a possibility of some time in the future having to transport coal to this plant, in which event water transportation would probably be the most economical.
>
> We therefore request that you consider in your plans for improving Youngs Bay improvements in the harbor giving a 30-foot channel 300 feet wide from the Columbia River to the county bridge across Youngs Bay with suitable harbor depths fronting our property that oil or coal carriers may be docked at our pier.

22. The Astoria Chamber of Commerce in letter of August 26 states that it is desired to have a channel 30 feet deep and 300 feet wide in Youngs Bay; 20 feet deep and 200 feet wide in Youngs River, as far up as practicable; and at least 10 feet deep and 50 feet wide to Olney (Olney is on the Klaskanine River, a tributary of Youngs River); also a turning basin in Youngs River 500 feet wide (the location and depth are not specified).

LOCAL COOPERATION

23. No specific offers of cooperation have been made, although it is understood that dredging plant of the port of Astoria might be made available for work in Youngs Bay and River for operating cost only. Some months ago one or two of the towing companies offered to contribute about $100 each if the United States at that time had undertaken to give them temporary relief by dredging the worst shoal in the bay. Within recent years some work has been done by private interests in improvement of the channel in Klaskanine River where a large part of the logs are dumped; some dredging has been done in Youngs River above the mouth of Klaskanine, and snags have been removed from Youngs River.

EFFECT OF IMPROVEMENT

24. The improvement would result in a saving to towboat companies engaged in towing logs from Youngs River to points on the Columbia above Astoria. It would make it practicable to handle rafts at any stage of the tide. Also, it would be possible in handling the heavy tows to take advantage of ebb tide currents in Youngs River and flood tide currents in the Columbia. This, under present conditions, is not practicable.

LOCAL OR NATIONAL BENEFITS

25. The benefits which would result from the improvement would principally affect the cost of towing, and, with competition, as there is in this business, would probably result in reduced cost of logs at the mills. Such benefits would be general in effect.

WATER POWER

26. The navigable section of Youngs River is tidal, as has been stated, and there is no possibility of power development, land reclamation, irrigation, or flood control, so related to the work desired that they could be coordinated therewith, to lessen the cost.

Just above the navigable section of Youngs River there is a fall of about 69 feet where a limited amount of power could be developed, but this would have no effect on navigation in the tidal section of the river.

CONCLUSIONS AND RECOMMENDATIONS

27. It is believed that improvement of Youngs Bay and River by the Federal Government may be justified. The traffic now moving amounts to about 700,000 tons per annum and will probably continue at this rate for about 20 years. Towing operations are at present handicapped on account of the necessity of waiting for the tides for sufficient depth to accommodate the larger tugs which are needed to make the tow up the Columbia River.

28. Channel depth in excess of that required for these towboats, however, is considered unnecessary at this time, as the sea-going rafts which are handled in Youngs Bay (about one to every three days) generally enter the Columbia River under flood tide conditions at the mouth and reach Youngs Bay while the tide is fairly high, and other

prospective traffic which might require a greater depth of water is too remote to be given serious consideration at this time.

29. The cost of providing and maintaining a channel suitable for tug boats as far up as the mouth of Klaskanine River would not be very great when the volume of traffic is considered.

30. It is, accordingly, recommended that a survey and estimate of cost of the improvement of Youngs Bay and Youngs River, Oreg., be made with a view to providing a channel depth suitable for tug boat traffic as far as the mouth of the Klaskanine River.

OSCAR O. KUENTZ
Major, Corps of Engineers, District Engineer.

[First indorsement]

OFFICE DIVISION ENGINEER, NORTH PACIFIC DIVISION,
Portland, Oreg., October 23, 1930.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

Forwarded, concurring in the views of the district engineer and his recommendation that a survey be made.

G. R. LUKESH,
Colonel, Corps of Engineers, Division Engineer.

[Third indorsement]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., December 2, 1930.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. For the reasons stated herein, the board concurs with the district and division engineers in recommending a survey to determine the advisability and cost of the improvement.

For the board:

HERBERT DEAKYNE,
Colonel, Corps of Engineers, Senior Member.

REPORT ON SURVEY OF YOUNGS BAY AND YOUNGS RIVER, OREG.

SYLLABUS

The district engineer is of the opinion that improvement of Youngs Bay and Youngs River, Oreg., by the Federal Government is justified to the extent of providing a channel 10 feet deep and 150 feet wide from the Columbia River to the foot of Haven Island, a distance of about 7.4 miles, at an estimated cost of $5,000 for new work and $1,800 per annum for maintenance. Improvement above Haven Island is not considered advisable.

WAR DEPARTMENT,
OFFICE OF THE DISTRICT ENGINEER,
Portland, Oreg., September 29, 1931.

Subject: Report on survey of Youngs Bay and Youngs River, Oreg.
To: The Division Engineer, Pacific Division, San Francisco, Calif.

1. In compliance with instructions contained in department letter of December 4, 1930, the following report on Youngs Bay and Youngs River, Oreg., is submitted.

2. Preliminary examination report on Youngs Bay and Youngs River was submitted October 15, 1930.

3. The traffic on Youngs Bay and River is principally in the towing of rafted logs and hog fuel and fuel oil in barges. The rafted logs are handled over the full length of Youngs River and Bay from a point about one-half mile below the falls. Hog fuel (sawmill refuse) is delivered at the wharf of the Pacific Power & Light Co. on Youngs Bay, and fuel oil in barges is taken up Youngs River to supply logging railroads which have their termini on this stream and on the Klaskanine River, a branch entering Youngs River a short distance below the falls. (See map herewith and map [1] submitted with preliminary report; also United States Coast and Geodetic Survey Chart No. 6151.)

COMMERCE AND NAVIGATION

4. Since the preliminary report was submitted the movement of logs from Youngs River and Bay has fallen off about 50 per cent as a result of the generally depressed condition of the lumber market. The receipt of logs in sea-going rafts has stopped entirely. Hog fuel in barges is still being received at the Pacific Power & Light Co. plant on Youngs Bay in about the same quantity as previously reported.

5. The present commerce on Youngs Bay and River is summarized as follows:

	Value
Outbound logs, 200,000 tons	$600,000
Inbound hog fuel, 60,000 tons	18,000
Inbound fuel oil, 1,800 tons	6,000
Total per annum, 261,800 tons	624,000

The draft of tugs handling logs and fuel barges is about 6 to 10 feet.

6. There are no mills on Youngs Bay or River, so that nearly all the logs are destined to points on Columbia River at and above Astoria. Some go into the Skipanon Channel at the mouth of Youngs Bay. It is the aim of towing companies to time the movement of log rafts, so far as practicable, to take advantage of tidal currents, towing down Youngs River from the storage booms on the ebb tide, with a view to reaching the lower bay and Columbia River at such time as to take advantage of the succeeding flood tide for the tow up the Columbia.

7. Under the above scheme of towing, Youngs Bay would usually be traversed by outgoing traffic at a low stage of tide, while the tow through the upper part of the river would be made while the tidal stage is perhaps 2 feet or more above low water. Oil barges towed up the river move, in general, on the flood tide, which again provides an additional stage of water in the upper reaches over that obtaining while crossing the low bay. The oil is loaded on barges at Astoria. While it is desired to tow with the tides as above outlined, it is not possible in most cases for the larger boats with the present depths in the bay. Delays are necessary waiting for the tide to serve in the Columbia, or for sufficient depth to cross the bay.

8. The principal booms used for storage of rafted logs are in the vicinity of and below Haven Island. Boats used for making the heavy tows up the Columbia pick up most of their tows at these

[1] Not printed.

booms. There is some storage above these booms, but the river width is rather too narrow and smaller boats used in the handling and rafting of logs in the upper reaches take the logs down to the main storage grounds. (See map.)

9. It is for these reasons considered essential for a balanced project that a greater depth be made available in Youngs Bay and the river below Haven Island than above that point. Estimates have accordingly been prepared for a channel 10 feet deep and 150 feet wide in Youngs Bay and Youngs River to the foot of Haven Island, thence for depths of 8 feet and 6 feet and width of 100 feet in Youngs River to the mouth of Klaskanine River. The greater width of channel in the bay is considered necessary on account of greater exposure to wind and because of distance from landmarks.

10. *Estimates of cost.*—

A. Channel 10 feet deep and 150 feet wide in Youngs Bay and River from Columbia River channel to foot of Haven Island, a distance of about 7.4 miles:	
Dredging 45,000 cubic yards at 10 cents	$4,500
Engineering and contingencies	500
Total	5,000
Annual maintenance, at 12 cents per cubic yard	1,800
B. Channel 8 feet deep and 100 feet wide in Youngs River from foot of Haven Island to mouth of Klaskanine River, a distance of about 2.9 miles:	
Dredging 102,000 cubic yards at 12 cents	12,240
Dike construction, 800 feet	4,500
Engineering and contingencies	1,600
Total	18,340
Annual maintenance, at 15 cents per cubic yard	2,250
B–1. Same as B except for depth of 6 feet:	
Dike construction	4,500
Engineering and contingencies	500
Total	5,000
Annual maintenance	700

11. The estimate for an 8-foot channel above Haven Island includes construction of a check dike, or permeable dam, connecting the head of Haven Island with the mainland to the south. The channel to the south of this island, while shallower than the channel used for navigation, is much wider, and probably carries the larger part of the flow of the river, especially on the first part of the ebb tides. Closure of this channel would very materially assist in maintaining the navigation channel, which now has a depth of only 4 feet opposite the head of the island.

12. For a depth of 6 feet the closing dike only has been included in the estimate, and dredging has been eliminated. It appears probable that construction of the dike would create a depth of 6 feet in the channel through scouring action and that little maintenance dredging would be required. The cost of the dike or necessary dredging to create 6 feet depth is practically the same, but the dike would effect a more permanent improvement. Furthermore, dredging on a 6-foot channel is hardly practicable with an ordinary pipe-line dredge, most of which require 7 to 8 feet of water or more in which to operate.

13. Maintenance of a 10-foot channel in the bay is based on the assumption that the channel would fill in about three years to its original condition. For the 8-foot channel above Haven Island it is

assumed that the depth after dredging would decrease gradually to about 6 feet, its natural depth for normal width, in a period of three or four years, or at the rate of about 15,000 cubic yards per annum. The cost per yard for maintenance would probably be about 15 cents.

LOCAL COOPERATION

14. As to local cooperation, the situation has not changed materially since preliminary report was made. There is no central organization to arrange for concerted action outside of the port of Astoria, and the port has stated that it is not now in position to offer any financial aid. The dredging plant of the port of Astoria might be made available for doing the work at operating cost only.

DISCUSSION

15. At the present rate of movement there are about 200 tows of fattened hogs leaving Youngs River per annum. With present depths in Young Bay the tows are delayed waiting for suitable tidal conditions and depth of water to pass out into the Columbia. As before stated, the time of arrival at the mouth of the bay is important, as the ebb tides in the Columbia are very strong and it is necessary for the operating towboat to take advantage of flood-tide conditions in ascending that river.

16. Assuming that each of the 200 tows is delayed an average of three hours owing to favorable tide and weather conditions, at $40 per hour the total annual cost of delays would be $24,000. It is believed, however, that since all of the boats do not require six increase in depth in the bay, and since many of the tows [illegible] to zero, a total saving of delays would be less than half of the amount. The value of delays due to present depths in the bay is probably [illegible] about $2,500 per annum. With present depths in Youngs River for a distance of about 3 miles below the mouth of Klaskanine there are also some delays waiting for tides to increase the depth of water. The amount of these is difficult to estimate as the smaller boats used in the upper part of the river can profit by arranging their work in assembling rafts so as largely to avoid such delays. Placing these losses at $500 per annum, the total for the bay and river would be about $3,000 per annum.

17. The following summary of estimated costs and probable savings in transportation costs is made for easy reference:

Channel section	Dimensions (feet)	First cost	Annual maintenance	Total estimated annual cost	Estimated annual savings
A. Youngs Bay and River to foot of Haven Island	10 by 150	$5,000	$1,800	$2,000	[illegible]
B. Youngs River, foot of Haven Island to mouth of Klaskanine River	8 by 100	18,340	2,250	2,983	[illegible]
B-1. Same section	6 by 100	5,000	700	900	[illegible]

[illegible] Probable savings effected exceed costs.
[illegible] Probable savings effected are less than cost necessary to secure them.

18. The above figures indicate that improvement of the Youngs River above Haven Island is not justified on the basis of savings to be effected in transportation costs, either for a depth of 8 feet or 6

feet. There is an apparent saving of about $500 per annum, which would result from improvement of the channel in Youngs Bay and River to the foot of Haven Island to provide a channel depth of 10 feet at mean lower low water and width of 150 feet.

CONCLUSIONS AND RECOMMENDATIONS

19. The district engineer is of the opinion that dredging of the shoal in Youngs Bay for a distance of about 3,000 feet to provide a depth sufficient for the larger towboats would meet all the essential needs of navigation at the present time, as completion of such a project would connect the long stretch of deep water below Haven Island with the main channel of the Columbia and would eliminate practically all the delays now experienced in towing from the storage booms in Youngs River to points on the Columbia above Astoria. The cost of this improvement would not be excessive, and it appears to be justified on the basis of savings in towing costs.

20. It is accordingly recommended that improvement of Youngs Bay and River, Oreg., be undertaken by the Federal Government with a view to providing a channel 150 feet wide and 10 feet deep at mean lower low water from the Columbia River to the foot of Haven Island.

21. If approved, an allotment to cover the entire estimated cost should be made at one time.

OSCAR O. KUENTZ,
Major, Corps of Engineers, District Engineer.

REPORT OF THE DIVISION ENGINEER

SYLLABUS

The division engineer recommends improvement of Youngs Bay and Youngs River, Oreg., to the extent of providing a channel 150 feet wide and 10 feet deep at mean lower low water from the Columbia River to the foot of Haven Island at an estimated cost of $5,000 for new work and $1,800 per annum for maintenance. Improvement of the waterway above Haven Island does not appear to be justified at this time.

WAR DEPARTMENT,
OFFICE OF THE DIVISION ENGINEER, PACIFIC DIVISION,
San Francisco, Calif., November 4, 1931.

Subject: Survey of Youngs Bay and Youngs River, Oreg.
To: The Chief of Engineers, United States Army.

1. Preliminary examination and survey of Youngs Bay and Youngs River was authorized by the river and harbor act approved July 3, 1930. Report on the preliminary examination was made under date of October 15, 1930, and a survey was authorized. The survey has been made by the district engineer and his report thereon is transmitted herewith.

2. Youngs River is a tributary of the lower Columbia that flows into Youngs Bay, an arm of the Columbia near Astoria, and about 10 miles from the mouth of the Columbia. The river has a length of about 20 miles above the highway bridge at the upper end of Youngs Bay and a watershed of about 115 square miles. The tidal section

of the river is about 8¼ miles long and extends to within 1 mile of 69-foot falls. Above the falls the river is a steep mountain stream. The width of the river varies from about 1,300 feet at its mouth to about 300 feet at the confluence of the Klaskanine, 7 miles above the mouth. Depths in the tidal section vary from 4 feet to 15 feet below mean lower low water for most of the length. The minimum depth in the channel through Youngs Bay is 8 feet. The navigable channel through the bay has a length of about 3 miles. The mean tidal range from higher high water to lower low water is 7½ feet in Youngs Bay and about 6 feet at the mouth of Klaskanine River.

3. The river and harbor act of September 19, 1890, appropriated $1,600 for improvement of Youngs and Klaskanine Rivers which was used for removal of snags and overhanging trees. No other expenditures for improvement of navigation have been made by the Federal Government, and there is no existing project for improvement of Youngs Bay and Youngs River.

4. Towboat companies engaged in towing logs in Youngs Bay and Youngs River desire a channel of sufficient depth to accommodate their larger boats at any stage of the tide and of suitable width. The draft of the larger boats is about 10 feet. The Pacific Power & Light Co. has requested that consideration be given to a channel 30 feet deep and 300 feet wide through Youngs Bay to its plant. The Astoria Chamber of Commerce requests a channel 30 feet deep and 300 feet wide through Youngs Bay, 20 feet deep and 200 feet wide in Youngs River as far up as practicable, and at least 10 feet deep and 50 feet wide to Olney on the Klaskanine River; also a turning basin in Youngs River 500 feet wide.

5. The commerce of Youngs Bay and River consists primarily of rafts of logs and sawmill refuse, the latter moving in barges from mills on the Columbia River to the plant of the Pacific Power & Light Co., where it is used for fuel. Logs are mostly outbound from points on Youngs and Klaskanine Rivers to which they are brought by logging railroads. The total commerce for 1930 was estimated as 640,000 tons of rafted logs and 60,000 tons of barged sawmill refuse. The present rate of movement of logs is much less as a result of generally depressed conditions in the lumber market. Tributary to Youngs River are large quantities of timber estimated by logging companies at about 2,000,000,000 feet, board measure (about 6,000,000 tons). This timber can be transported to market at a less cost by way of the river than by any other route.

6. Four towing companies engaged in handling logs in rafts and in towing fuel make frequent trips in and out of the bay and river. Two logging railroads, one of them a common carrier, operate between the timber tracts and the log booms on the river.

Logs from Youngs River are generally destined to mills on the Columbia River at or above Astoria, and it is desirable on account of the strong current on the Columbia that tows go up that river on the flood tide. The towing companies aim to take advantage of tidal currents in so far as practicable and logs are towed down Youngs River from the storage booms on the ebb tide with a view to reaching the lower bay at such time as to go up the Columbia on the succeeding flood tide. Youngs Bay is, therefore, usually traversed by outgoing tows at a low stage of the tide while the tow through the upper part of the river is made while the stage is perhaps 2 feet or more above

low water. Oil barges loaded at Astoria are towed up Youngs River on the flood tide which provides an additional stage of water in the upper reaches over that obtaining while passing through the bay. The principal booms used for storage of logs are in the vicinity of or below Haven Island. The logs are brought down Youngs River to these booms by small boats and picked up there by larger boats used for making the heavier tow up the Columbia. Although stages of less than 10 feet occur below Haven Island only a few hours per day as an average, this period of minimum depth is so timed that it is a considerable handicap to log towing.

7. A depth of 10 feet at all times from Haven Island to the Columbia River would, by permitting tows to pass through this stretch at low tide, facilitate the towing of logs. It is estimated that the benefits to navigation that would result from deepening of this channel to 10 feet would amount to $2,500 per annum. The value of a deeper channel than now exists above Haven Island would be small as the log-towing vessels can, without serious inconvenience, time their movements so as to avoid the brief period of low water that occurs during each tidal cycle.

A ship channel in Youngs Bay and River would benefit the Pacific Power & Light Co. when and if in the future it changes from wood fuel to coal. In that event coal could be brought to the powerplant most economically in deep-draft vessels. There is no present or immediately prospective commerce that would be benefited by a ship channel in Youngs Bay and River.

8. The district engineer recommends the dredging of a channel 10 feet deep and 150 feet wide through shoals between the Columbia River and the foot of Haven Island. The estimated first cost of this channel is $5,000 with $1,800 per annum for maintenance.

The district engineer has prepared estimates for a 6-foot and an 8-foot channel from the foot of Haven Island to the mouth of the Klaskanine River. The cost of the former is estimated at $5,000 and of the latter $18,340. He finds that the prospective benefits do not justify either of these plans of improvement above the foot of Haven Island. There have been no offers of local cooperation. There is no central organization to arrange for concerted action except the port of Astoria, and the port has stated that it is not in a position to offer any financial aid.

9. I concur in the views of the district engineer and recommend improvement of Youngs Bay and Youngs River, Oreg., so as to provide a channel 150 feet wide and 10 feet deep at mean lower low water from the Columbia River to the foot of Haven Island at an estimated cost of $5,000 and $1,800 annually for maintenance.

10. There are no subjects other than that of local cooperation so related to the proposed improvement that they might be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interest of navigation.

THOMAS M. ROBINS,
Lieutenant Colonel, Corps of Engineers,
Division Engineer.

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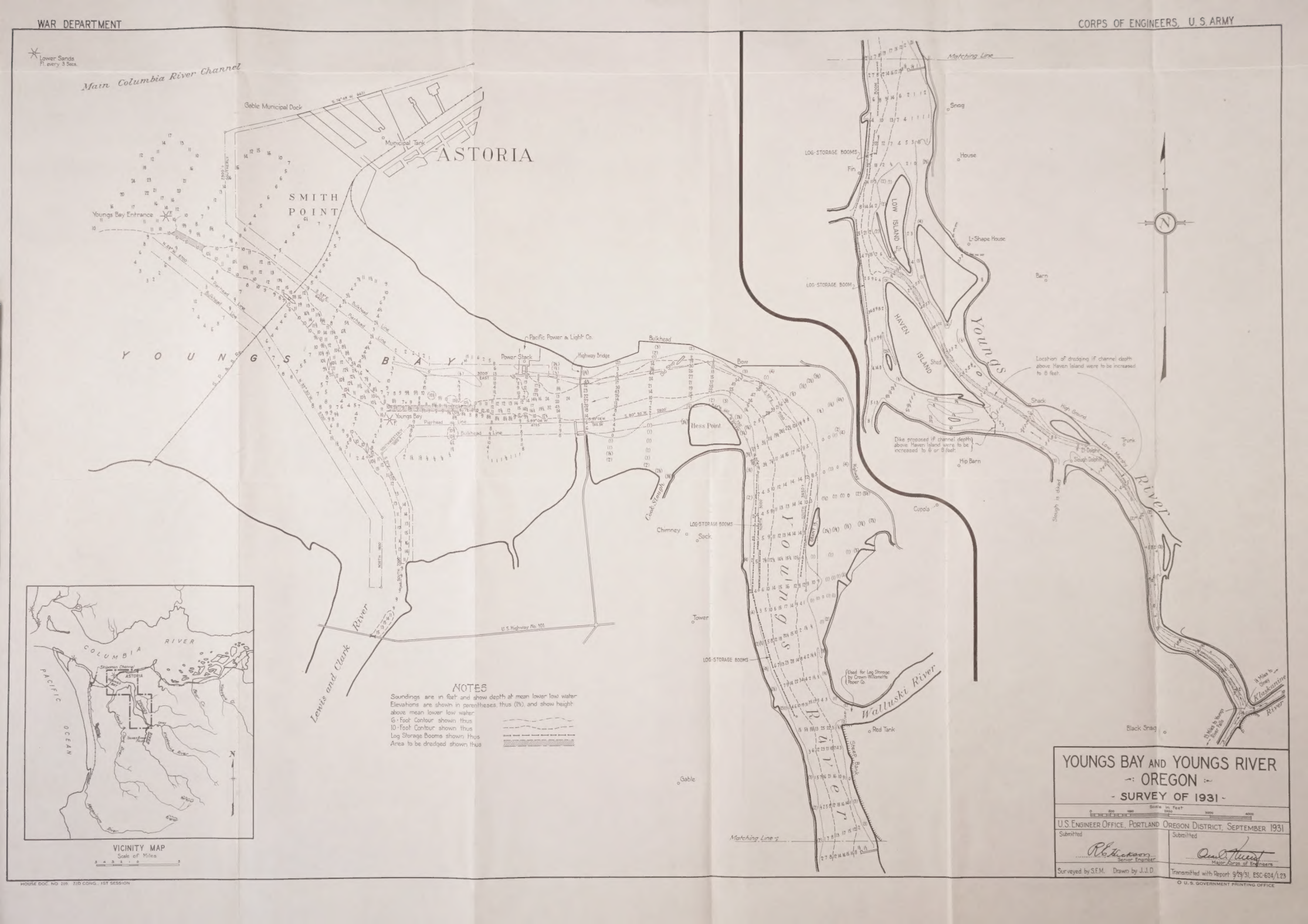
WAR DEPARTMENT

CORPS OF ENGINEERS, U.S. ARMY



YOUNGS BAY AND YOUNGS RIVER
- OREGON -
- SURVEY OF 1931 -

Scale in Feet

U.S. ENGINEER OFFICE, PORTLAND OREGON DISTRICT, SEPTEMBER 1931

Submitted
R. B. Stevenson
Senior Engineer

Submitted
Major, Corps of Engineers

Surveyed by S.F.M. Drawn by J.J.D.

Transmitted with Report 9/29/31. ESC-624/123

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